



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : I-Cherng CHEN et al. Confirmation No: 2981
Appl. No. : 10/822,648
Filed : April 13, 2004
Title : Substrate Having A Zinc Oxide Nanowire Array Normal To Its
Surface And Fabrication Method Thereof

TC/A.U. : 1722
Examiner : R. M. Kunemund

Docket No.: : CHEN3658/REF
Customer No: : 23364

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to the Official Action of October 16, 2006, in connection with the above-identified application. This response is timely filed.

Applicants would like to begin by acknowledging with appreciation the indication in the outstanding Official Action that claims 9-21 are allowable and that claims 5-7 recite allowable subject matter and would be allowable if rewritten in independent format including all of the limitations of the base claim and any intervening claims. However, Applicants respectfully decline at this point in the prosecution of the instant application to rewrite these claims in independent format because Applicants respectfully submit that the pending claims of the instant application are allowable over the references of record and therefore the instant application is in immediate condition for allowance.

The rejection of claims 1-3 and 8 under 35 U.S.C. §103(a) as being unpatentable over the Chiuo et al. article has been carefully considered but is most respectfully traversed in light of the following comments.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be

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met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants also note MPEP §2143.01, which states in part that, if a proposed modification would render the prior art invention unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Applicants also most respectfully direct the Examiner's attention to MPEP § 2144.08 (page 2100-114) wherein it is stated that Office personnel should consider all rebuttal argument and evidence presented by applicant and the citation of *In re Soni* for error in not considering evidence presented in the specification.

The Official Action urges that Chiuo discloses a zinc nanowire array. The Official Action further urges that Chiuo discloses a substrate, a buffer material deposited on the substrate, where the buffer material can be a metal like copper or can be several layers, and a zinc oxide layer deposited on the buffer material. Applicants respectfully traverse the position that Chiuo discloses or suggests every element of the claimed invention for the following reasons.

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As described in previous responses, Chiuo appears to disclose two embodiments. In the first embodiment, Chiuo discloses a thin layer of titanium with a layer of copper deposited thereon. Clearly this example fails to read on the claims of the instant application because no nitride or oxide is disclosed.

In the second example, Chiuo discloses a thin layer of tantalum nitride with a layer of copper deposited thereon. It is not clear from the reference whether the buffer layer is considered to be only the tantalum nitride layer or both the tantalum nitride layer and the copper layer. Yet, regardless of whether the buffer layer in Chiuo is considered to be both the TaN layer and the copper layer or just the TaN layer, Applicants respectfully submit that neither interpretation discloses or suggests the presently claimed invention.

Assuming that the metal layer is not considered to be a part of the buffer layer, Applicants draw attention to the language in the claims of the instant application that recites "the nanowire compound layer comprises a zinc oxide layer on the crystal phase adjusting buffer". This portion of the claims clearly establishes that the zinc oxide layer is deposited on top of the crystal phase adjusting buffer. The claim language does not recite a zinc oxide layer that is over the crystal phase adjusting buffer (i.e., the zinc oxide is located over the buffer but a layer separates the two). Rather, the claims clearly define that the zinc oxide layer is deposited on the crystal phase adjusting buffer.

Thus, if Chiuo is interpreted such that the copper layer is not considered to be part of the buffer layer, then the reference fails to read on the claims of the instant application because the copper layer separates the TaN buffer layer and the zinc oxide. The presence of the copper layer over the TaN layer in Chiuo means that the reference does not disclose or suggest a zinc oxide layer on the crystal phase adjusting buffer as recited in the claims of the instant application. Accordingly, the reference is incapable of properly supporting a §103(a) rejection according to the guidelines set forth in MPEP §2143 and the rejection of the claims over Chiuo should therefore be withdrawn.

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Even if it is assumed that the copper layer on the TaN layer is part of the buffer layer, Applicants respectfully submit that the reference still fails to disclose or suggest every element of the claims. In this instance, Applicants draw attention to the recitation in claim 1 that “the crystal phase adjusting buffer is a single or multiple layer film made of oxide or nitride”. Applicants respectfully submit that use of the term “is” in reciting the materials used in the crystal phase adjusting buffer means that the crystal phase adjusting buffer consists of only a single or multiple layers of an oxide or nitride. Thus, while open language is used for the main elements of the claimed structure as urged in the Official Action, Applicants respectfully submit that closed language is used for the materials that make up one of the elements of the claimed structure, i.e., the crystal phase adjusting buffer. While the use of the term “comprising” in the claims may allow for other main elements to be present in the structure, use of the word “is” in describing the materials that make up the crystal phase adjusting buffer means that only those materials recited may be present in the crystal phase adjusting buffer.

In view of such an interpretation, Applicants respectfully submit that the buffer layer in Chiou, which is made of TaN and copper layers, does not read on the buffer recited in the instant claims, which is only an oxide or nitride layer or layers. Because Chiou therefore fails to disclose or suggest every element of the claims of the instant application, regardless of the interpretation, Applicants respectfully submit that a proper §103(a) rejection according to the guidelines set forth in MPEP §2143 has not been established. Accordingly, Applicants respectfully request that the §103(a) rejection of claims 1-3 and 8 over Chiou be withdrawn.

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In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested.

Respectfully submitted,
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Request for Reconsid.wpd

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